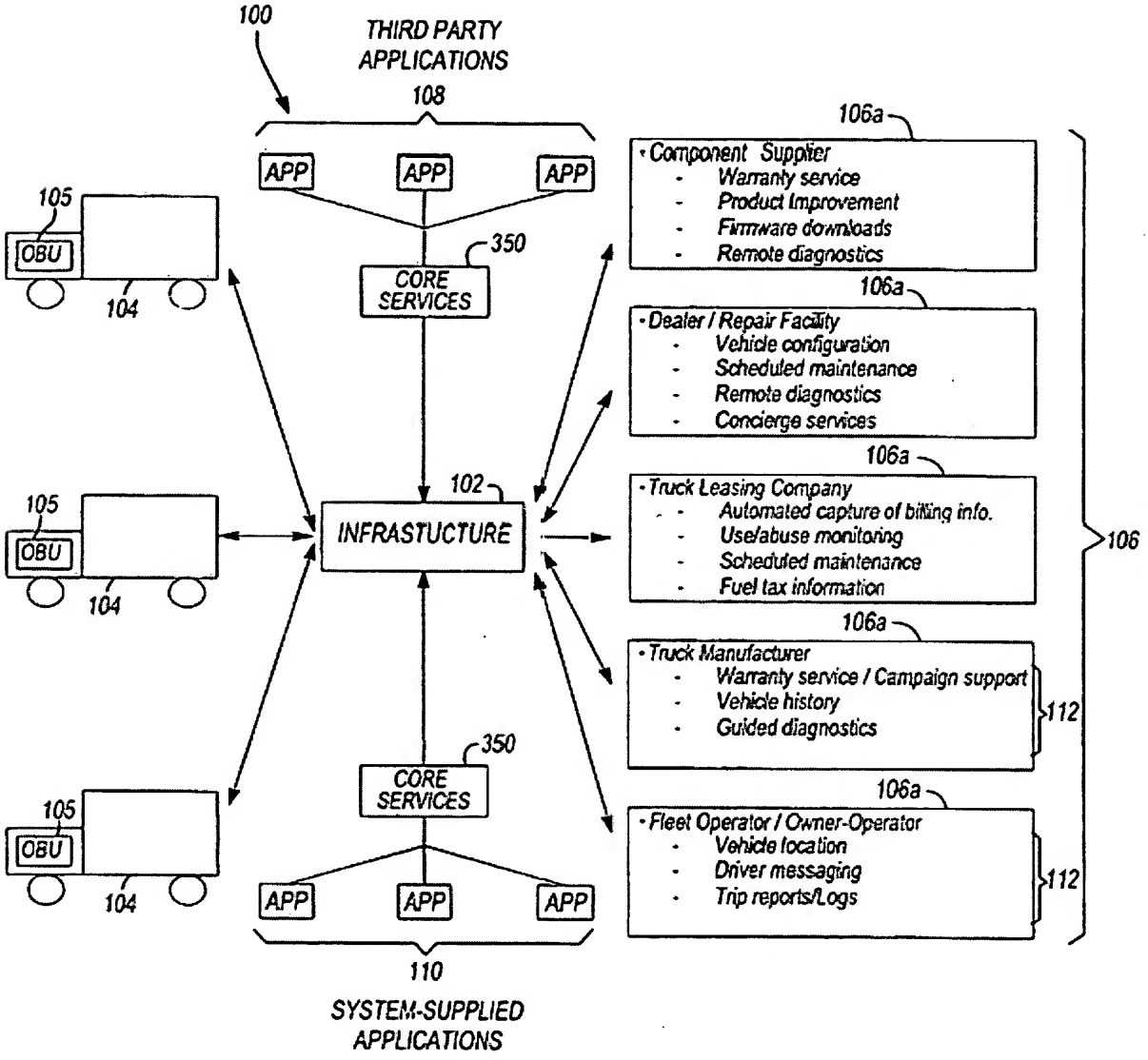
100
THIRD PARTY APPLICATIONS
108
APP
APP
APP
350
CORE SERVICES
102
INFRASTUCTURE
350
CORE SERVICES
APP
APP
APP
110
SYSTEM-SUPPLIED APPLICATIONS
105
OBU
104
105
OBU
104
105
OBU
104
106a
• Component Supplier
- Warranty service
- Product Improvement
- Firmware downloads
- Remote diagnostics
106a
• Dealer / Repair Facility
- Vehicle configuration
- Scheduled maintenance
- Remote diagnostics
- Concierge services
106a
• Truck Leasing Company
- Automated capture of billing info.
- Use/abuse monitoring
- Scheduled maintenance
- Fuel tax information
106a
• Truck Manufacturer
- Warranty service / Campaign support
- Vehicle history
- Guided diagnostics
112
106a
• Fleet Operator / Owner-Operator
- Vehicle location
- Driver messaging
- Trip reports/Logs
112
106

Fig-1

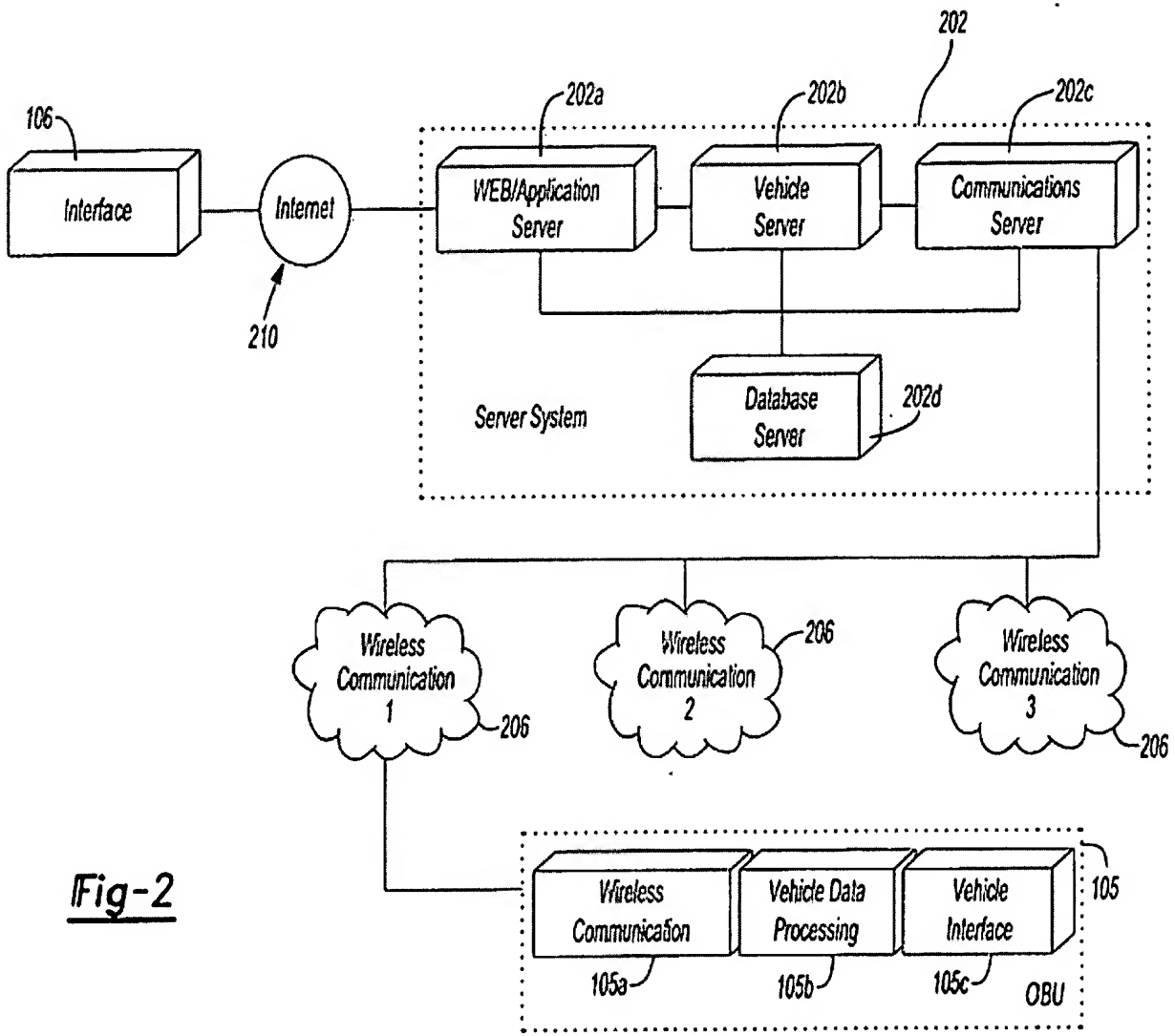
202
202a
202b
202c
106
Interface
Internet
WEB/Application Server
Vehicle Server
Communications Server
210
Server System
Database Server
202d
Wireless Communication 1
206
Wireless Communication 2
206
Wireless Communication 3
206
Wireless Communication
Vehicle Data Processing
Vehicle Interface
105
105a
105b
105c
OBU

Fig-2

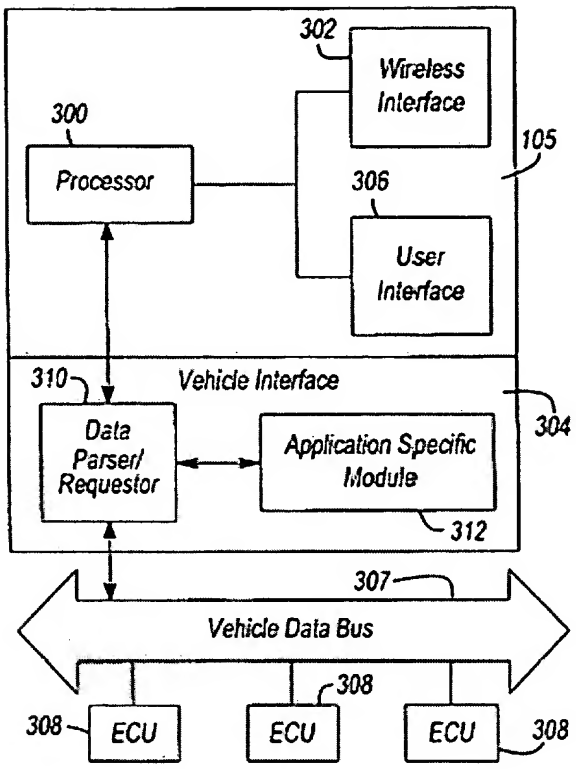
302
Wireless Interface
300
Processor
105
306
User Interface
310
Vehicle Interface
304
Data Parser/ Requestor
Application Specific Module
312
307
Vehicle Data Bus
308
308
ECU
ECU
ECU
308

Fig-3A

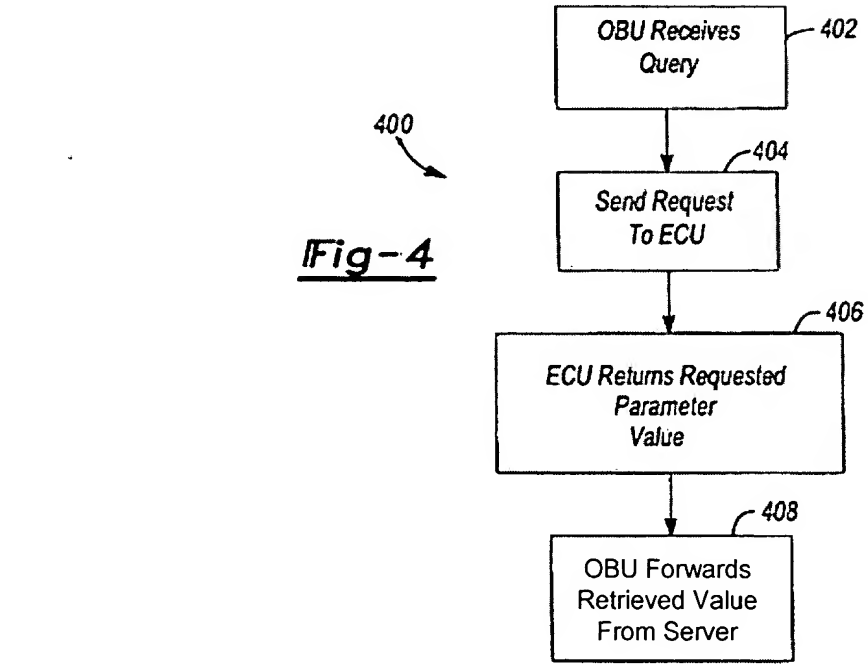
OBU Receives Query
402
400
404
Send Request To ECU
406
ECU Returns Requested Parameter Value
408
OBU Forwards Retrieved Value From Server

Fig-4

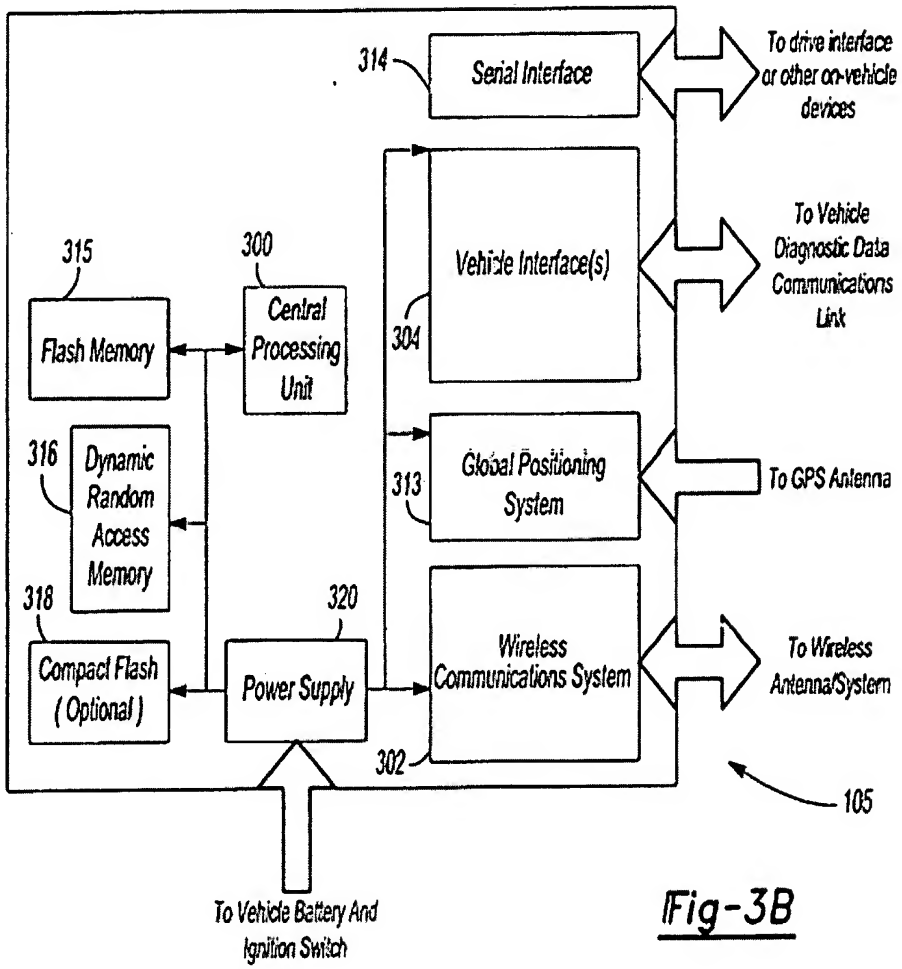
314
Serial Interface
To drive interface or other on-vehicle devices
Vehicle Interface(s)
304
To Vehicle Diagnostic Data Communications Link
315
Flash Memory
300
Central Processing Unit
316
Dynamic Random Access Memory
313
Global Positioning System
To GPS Antenna
318
Compact Flash (Optional)
320
Power Supply
Wireless Communications System
To Wireless Antenna/System
302
105
To Vehicle Battery And Ignition Switch

Fig-3B

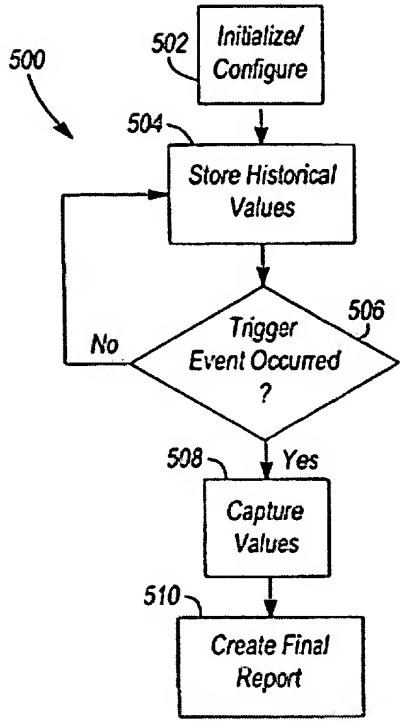
500
502
Initialize/ Configure
504
Store Historical Values
506
Trigger Event Occurred ?
No
Yes
508
Capture Values
510
Create Final Report

Fig-5

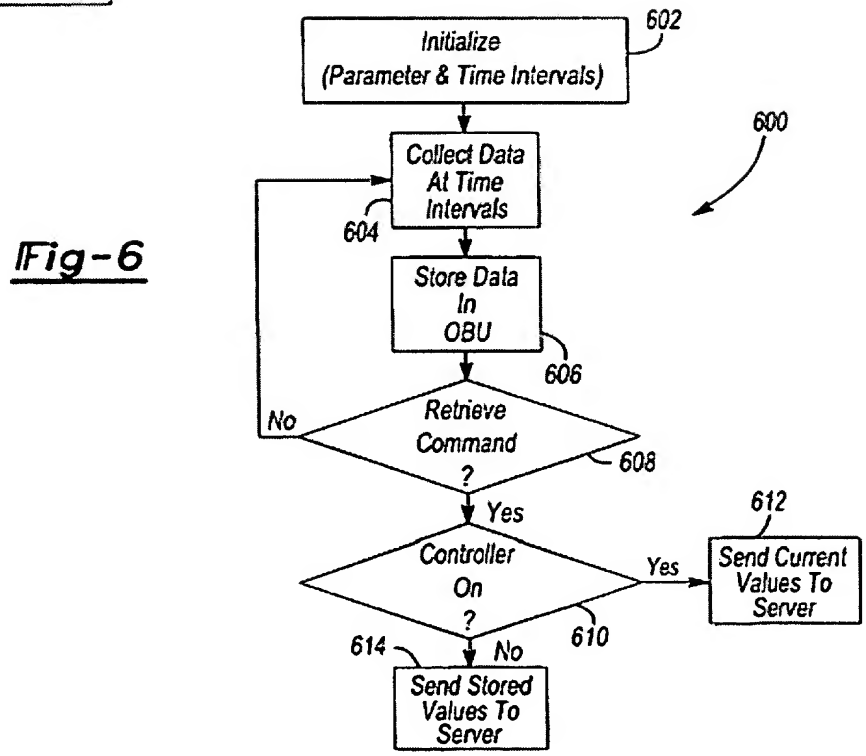
602
Initialize (Parameter & Time Intervals)
600
Collect Data At Time Intervals
604
Store Data In OBU
606
No
Retrieve Command ?
608
Yes
612
Controller On ?
Yes
Send Current Values To Server
610
614
No
Send Stored Values To Server

Fig-6

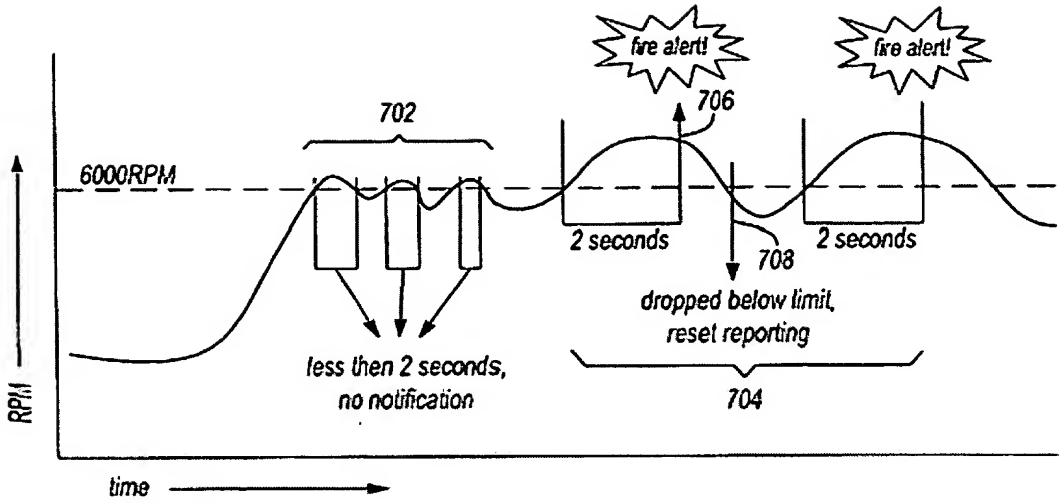

Fig-7

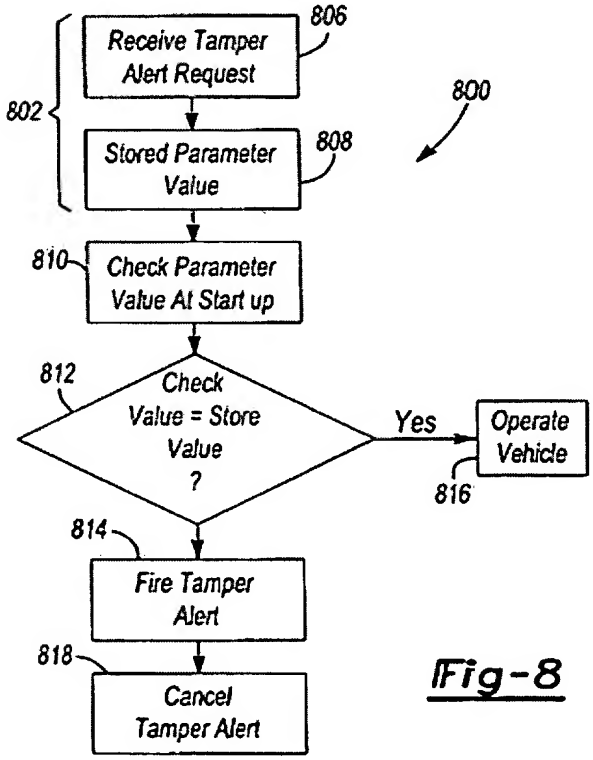

Fig-8

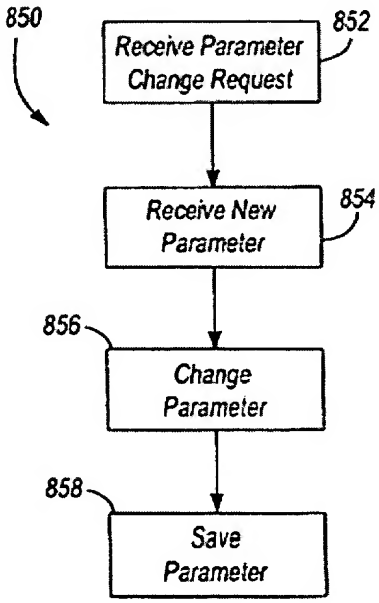

Fig-9

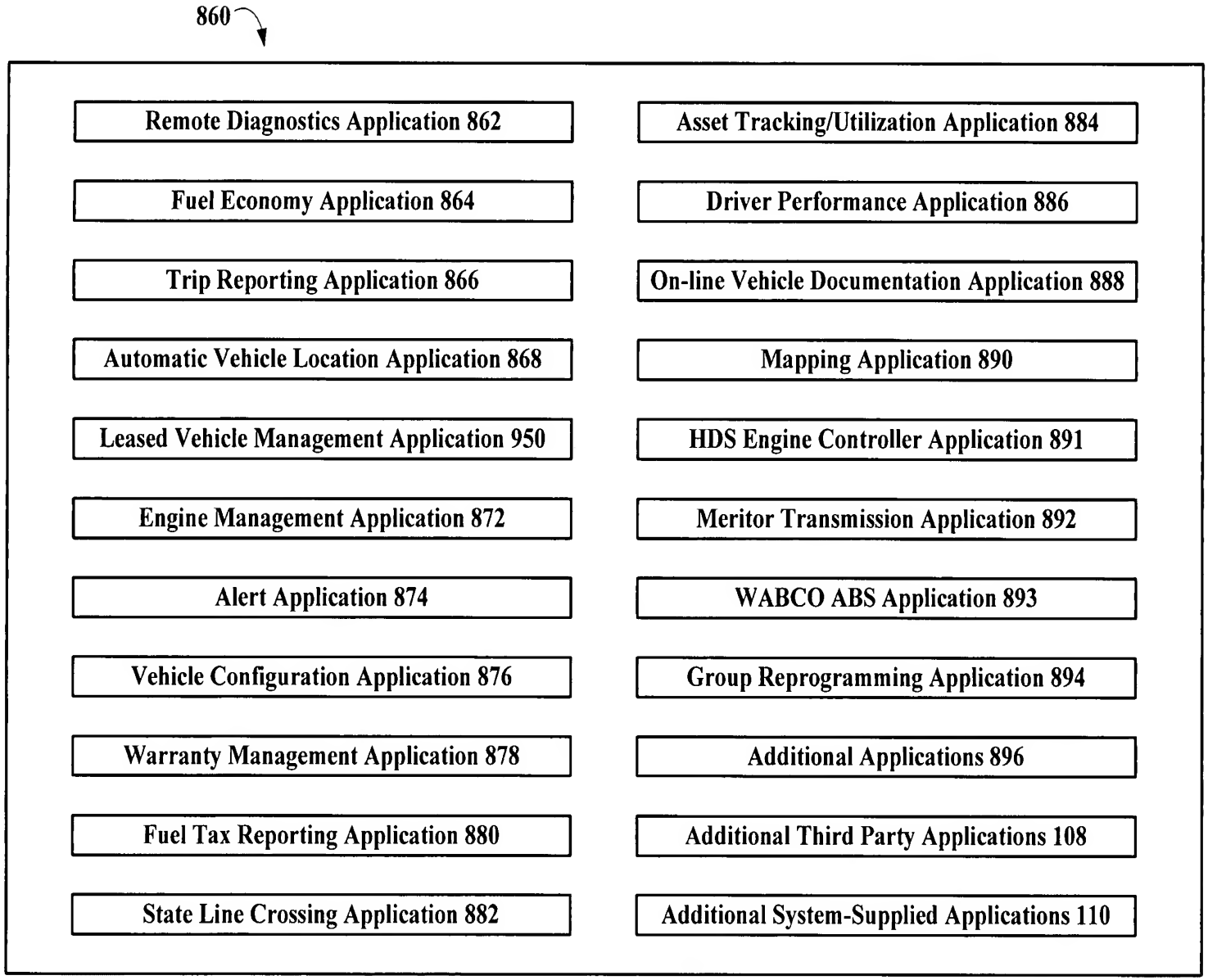
860
Remote Diagnostics Application 862
Fuel Economy Application 864
Trip Reporting Application 866
Automatic Vehicle Location Application 868
Leased Vehicle Management Application 950
Engine Management Application 872
Alert Application 874
Vehicle Configuration Application 876
Warranty Management Application 878
Fuel Tax Reporting Application 880
State Line Crossing Application 882
Asset Tracking/Utilization Application 884
Driver Performance Application 886
On-line Vehicle Documentation Application 888
Mapping Application 890
HDS Engine Controller Application 891
Meritor Transmission Application 892
WABCO ABS Application 893
Group Reprogramming Application 894
Additional Applications 896
Additional Third Party Applications 108
Additional System-Supplied Applications 110

FIG. 9A

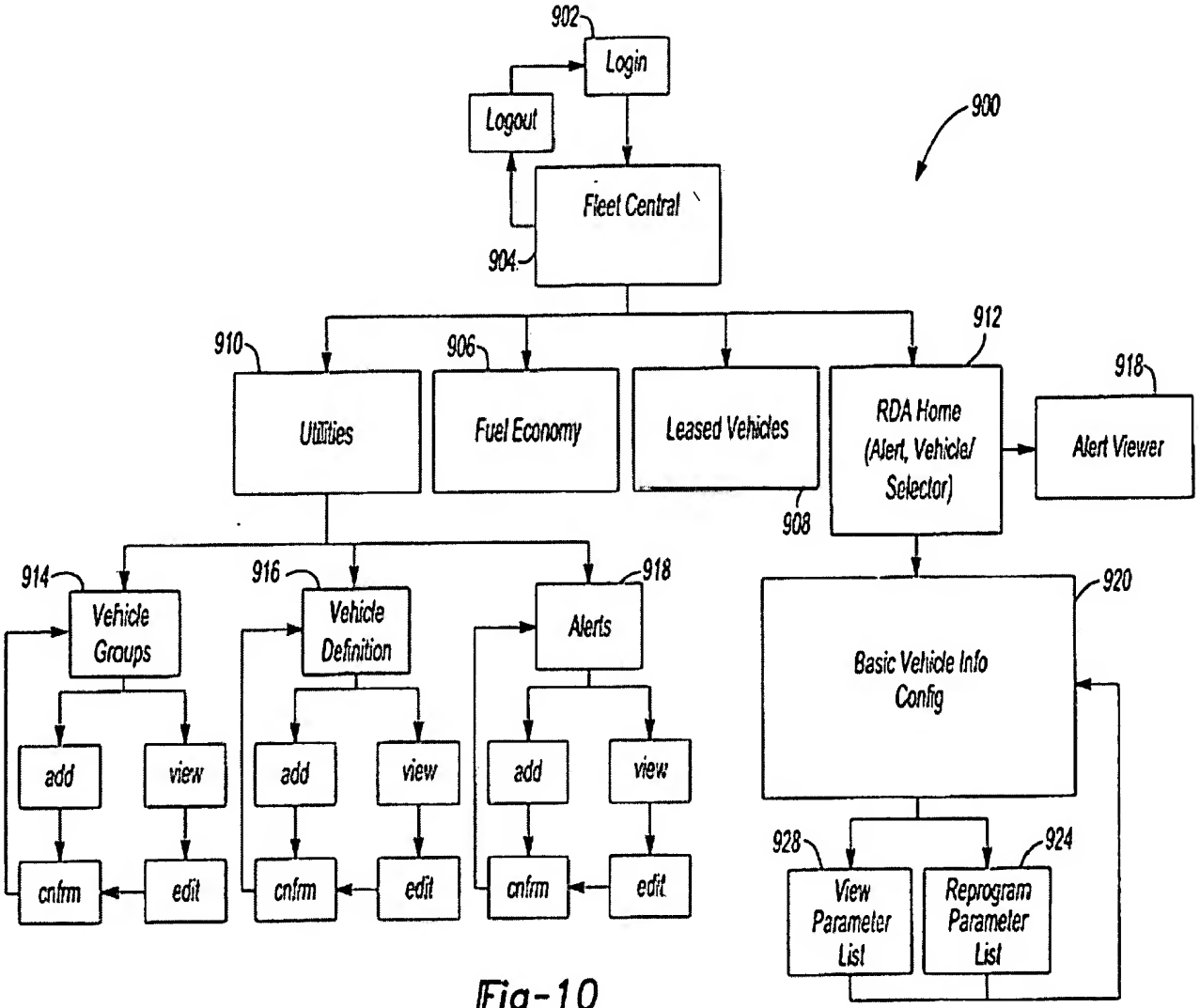
902
Login
Logout
900
Fleet Central
904
910
906
912
918
Utilities
Fuel Economy
Leased Vehicles
RDA Home (Alert, Vehicle/ Selector)
Alert Viewer
908
914
916
918
920
Vehicle Groups
Vehicle Definition
Alerts
Basic Vehicle Info Config
add
view
add
view
add
view
cnfrm
edit
cnfrm
edit
cnfrm
edit
928
924
View Parameter List
Reprogram Parameter List

Fig-10

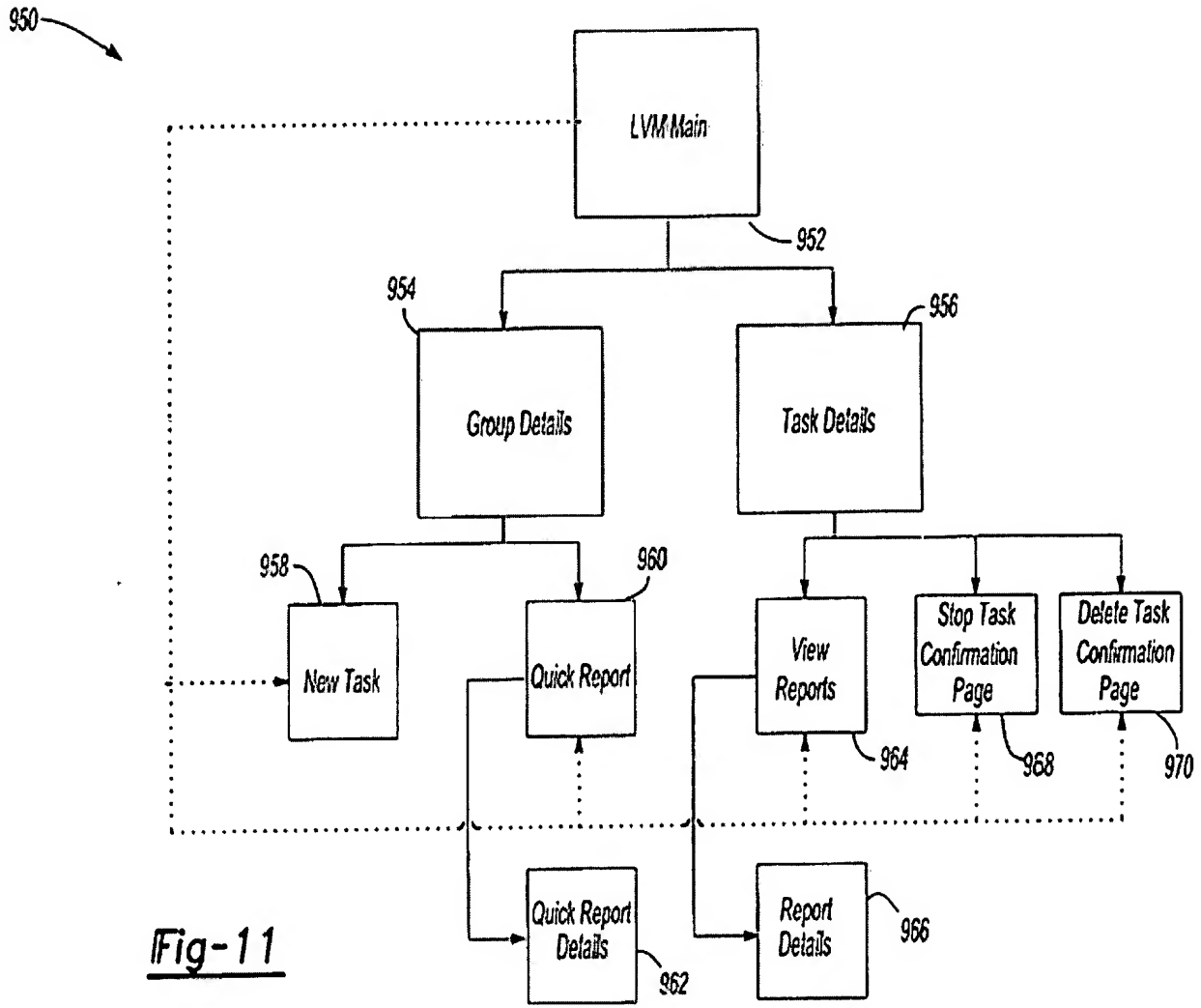
950
LVM Main
952
954
Group Details
956
Task Details
958
New Task
960
Quick Report
View Reports
964
Stop Task Confirmation Page
968
Delete Task Confirmation Page
970
Quick Report Details
962
Report Details
966

Fig-11

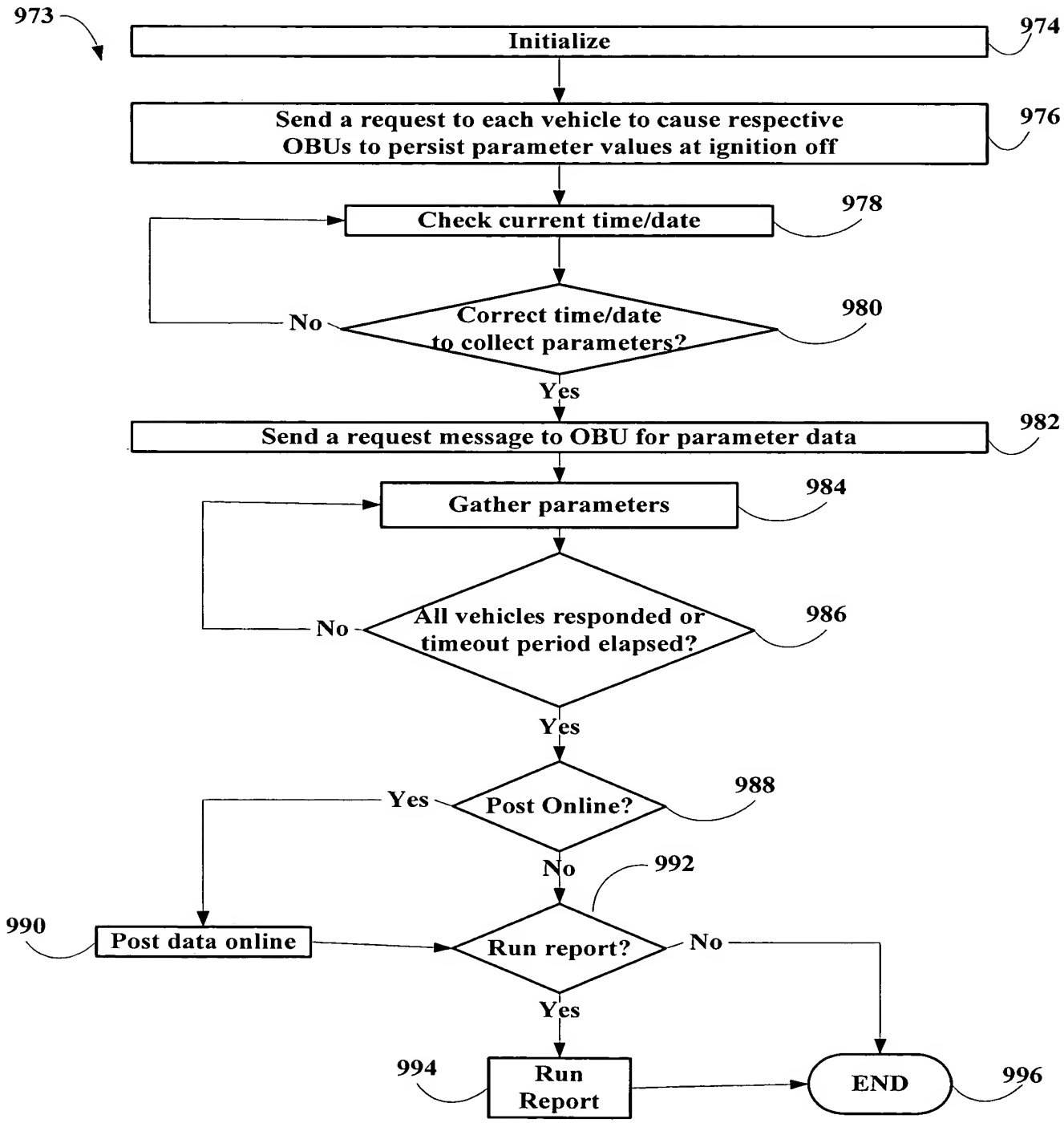
973
Initialize
974
Send a request to each vehicle to cause respective OBUs to persist parameter values at ignition off
976
Check current time/date
978
Correct time/date to collect parameters?
980
No
Yes
Send a request message to OBU for parameter data
982
Gather parameters
984
All vehicles responded or timeout period elapsed?
986
No
Yes
Post Online?
988
Yes
No
992
Post data online
990
Run report?
No
Yes
Run Report
994
END
996

FIG. 12

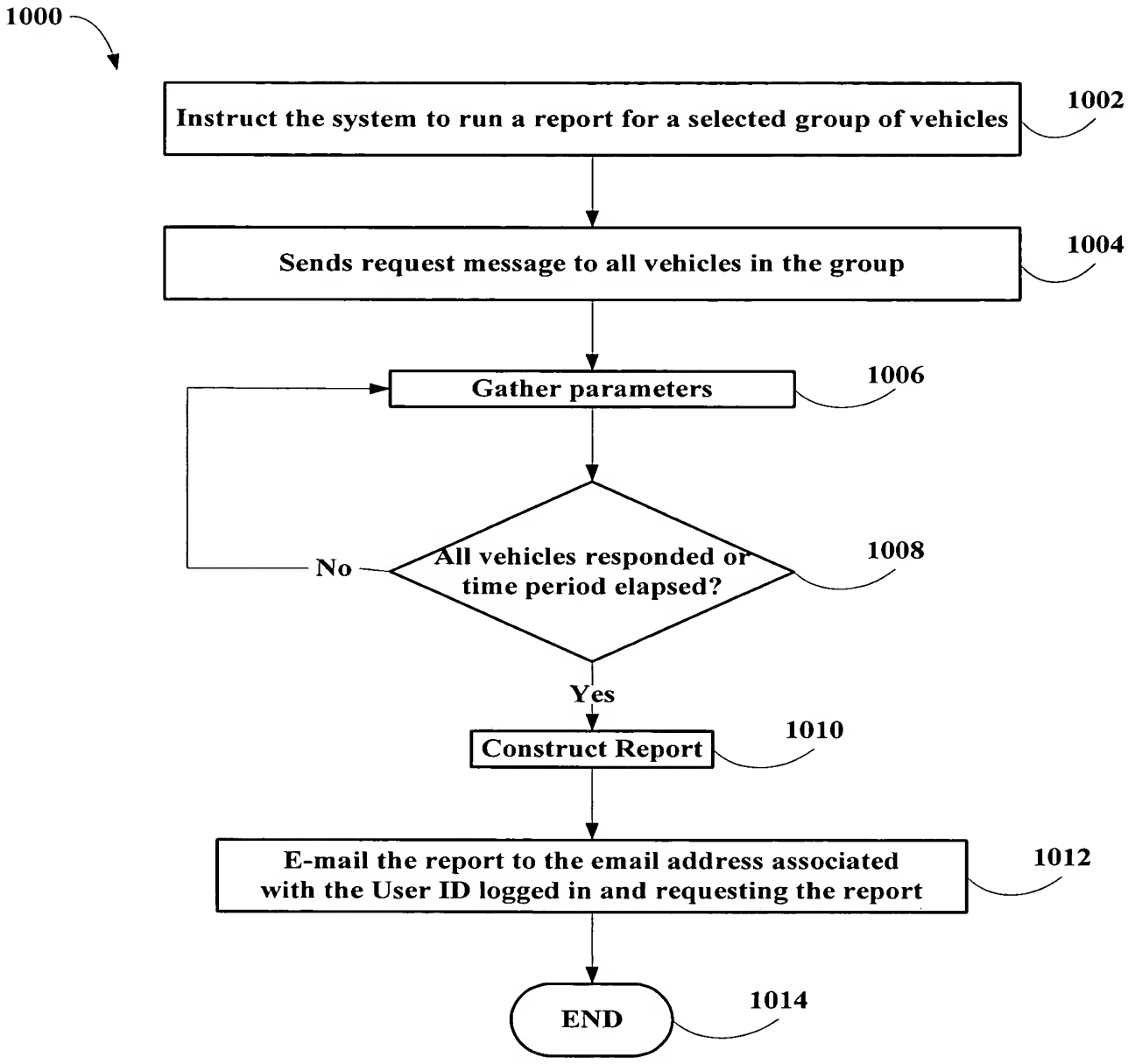
1000
Instruct the system to run a report for a selected group of vehicles
1002
Sends request message to all vehicles in the group
1004
Gather parameters
1006
All vehicles responded or time period elapsed?
1008
No
Yes
Construct Report
1010
E-mail the report to the email address associated with the User ID logged in and requesting the report
1012
END
1014

FIG. 13

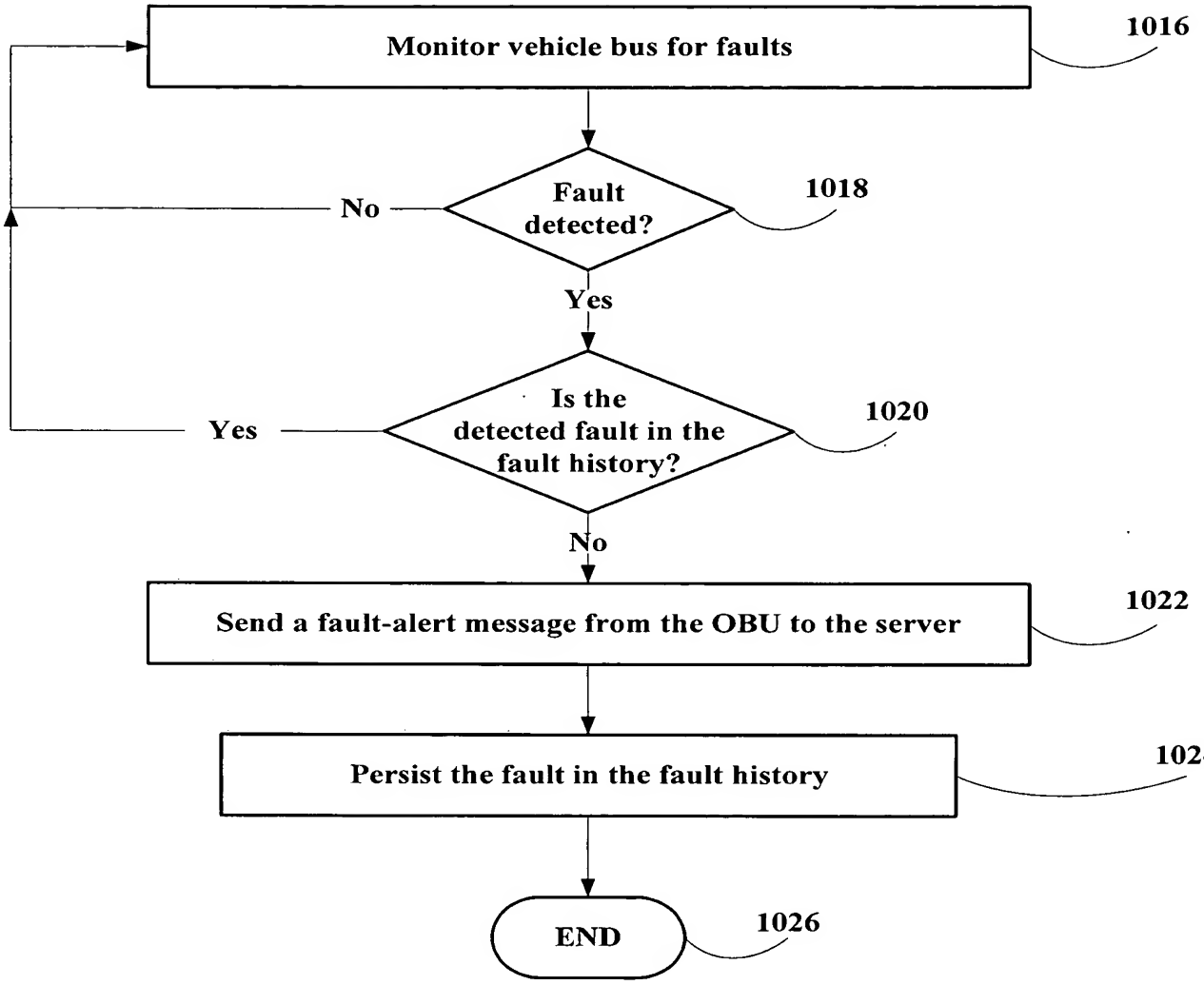
Monitor vehicle bus for faults
1016
Fault detected?
1018
No
Yes
Is the detected fault in the fault history?
1020
Yes
No
Send a fault-alert message from the OBU to the server
1022
Persist the fault in the fault history
1024
END
1026

FIG. 14